Eastport, Me., some damage was caused by lightning. A wind storm damaged fruit trees at Winters, Cal.

25th.—A heavy rain and hail storm passed over the eastern part of Colorado in the afternoon. A heavy hail storm moved from the north suburb of Denver to about Plattville, Weld Co., whence the course was eastward. The storm was most severe in the vicinity of Longmont, one of the finest agricultural districts in the state, where hail-stones of unusual size caused great destruction of grain. Lightning caused some damage but no fatalities were reported. Heavy rains caused washouts, delaying railroad traffic. In the vicinity of Denver the hail-stones were very large, and glass one-fourth inch in thickness was broken.

26th.—A heavy thunder-storm occurred at Middletown, Conn.; a factory building was struck by lightning and a number of persons were rendered unconscious. At Mount Carmel, Pa., a storm moved south of east, with light rain, thunder, and lightning, at 2.40 p. m. At Natalie, 3 miles from Mount Carmel, the storm lasted 3 minutes; 6 men were killed by the wrecking of a coal breaker. The breaker was a substantial building, 150 feet in length, and stood 155 feet above its foundation; it was valued at about $20,000. A thunder-storm, with rain and hail, occurred at New York City in the afternoon. A small storm, somewhat tornadic in character, passed over Troy, N. Y., causing damage to the extent of about $2,000. Near Omaha, Nebr., heavy rains caused washouts on railroads, swept away bridges, flooded sewers, etc. At Genoa, Nebr., railroad traffic was impeded by water flowing over the tracks. At Galveston, Tex., lightning exploded 3 powder magaziues 4 miles west of the city; 1 person was fatally, and 12 persons more or less, injured. The value of the powder destroyed was estimated at $17,500; damage was caused in the city by the shock.

27th.—At Amana, Iowa, 2 houses were struck by lightning. A heavy wind squall in the afternoon, with heavy rain, thunder, and lightning, caused damage to buildings and trees at Des Moines, Iowa. Thunder-storms caused damage in north Missouri, and thunder-storms, with unusually heavy rain, occurred in North Dakota and Minnesota. At Saint Paul, Minn., a house was struck by lightning, and 3 persons were seriously injured. Near Red Wing, Minn., crops were injured by high wind and heavy rain, and some damage was caused by lightning. Lightning struck several houses, causing slight damage, at La Crosse, Wis.

28th.—At Louisville, Ky., a thunder-storm, with high wind, prevailed between noon and 1 p. m., causing damage to trees, chimneys, etc. A storm, with heavy rain, thunder, and lightning, moved northeast over Dillsborough, Ind., at 5 p. m.; a whirling motion from right to left was reported; trees were torn up by the roots, some of the tops pointing east and some west. At Centralia, Ill., a heavy thunder-storm, with hail, moved northwest at 4 p. m., damaging buildings. Heavy hail storms injured crops in Iowa. Near Cresco, Iowa, hail-stones were reported as large as walnuts, and the storm was reported the severest hail storm ever experienced in Howard county. The storm was also very severe in Jasper, Montgomery, and Grundy counties. A heavy hail storm occurred at Dodge City, Kans., in the afternoon, causing some damage to crops.

29th.—Hail storms were reported at points in the Ohio, middle Mississippi, and lower Missouri valleys, and in the east Gulf states, causing damage to crops, etc., and heavy rain caused damage in the lower Missouri valley.

INLAND NAVIGATION.

Heights of rivers above low-water mark, June, 1891 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Date.	Height.	Date.	Height.	
Red River.						
Shreveport, La	29.9	26, 27	17.6	11	11.4	6.2
Arkansas River.						
Fort Smith, Ark	22.0	8	20.4	19	8.7	11.7
Little Rock, Ark	23.0	11	19.8	21	10.7	9.1
Missouri River.						
Fort Buford, N. Dak	.....	28	16.0	1	11.7	4.3
Sioux City, Iowa	18.7	19	13.3	7	9.6	3.7
Omaha, Nebr	18.0	29, 30	14.4	8	9.6	4.8
Kansas City, Mo	21.0	30	22.8	1	13.3	9.5
Mississippi River.						
Saint Paul, Minn	14.0	1	2.9	14, 15, 26	2.5	0.4
La Crosse, Wis	13.0	24-26, 30	4.6	13, 14, 15	3.7	0.9
Dubuque, Iowa	16.0	3, 30	4.9	16, 17	3.5	1.4
Davenport, Iowa	15.0	6, 7	3.4	16, 17	2.3	1.1
Keokuk, Iowa	14.0	9	4.3	17	2.5	1.8
Saint Louis, Mo	30.0	25	23.0	3	13.9	9.1
Cairo, Ill	40.0	14, 15	26.3	5	14.2	12.1
Memphis, Tenn	33.0	17	20.3	7, 8	11.2	9.1
Vicksburg, Miss	41.0	21, 22	29.3	2, 3	17.5	11.8
New Orleans, La	13.0	25	9.0	13, 14, 15	6.7	2.3
Ohio River.						
Pittsburg, Pa	22.0	8	11.9	30	2.9	9.0
Parkersburgh, W. Va	38.0	24	16.0	20	5.7	10.3
Cincinnati, Ohio	45.0	11	24.5	1	13.7	10.8
Louisville, Ky	24.0	12	10.1	1	5.6	4.5
Cumberland River.						
Nashville, Tenn	40.0	26	13.1	3, 4, 5	2.2	10.9
Tennessee River.						
Chattanooga, Tenn	33.0	26	7.6	7	3.9	3.7
Knoxville, Tenn	29.0	22	3.9	30	1.5	2.4
Monongahela River.						
Pittsburg, Pa	29.0	8	11.9	30	2.9	9.0
Savannah River.						
Augusta, Ga	32.0	13	12.4	30	6.8	5.6
Willamette River.						
Portland, Oregon	15.0	7	14.1	30	12.2	1.9
Susquehanna River.						
Harrisburg, Pa	17.0	24	6.2	1, 3, 4, 5, 6	2.0	4.2
Alabama River.						
Montgomery, Ala	48.0	12	8.5	30	2.7	5.8

FLOODS.

Destructive floods in the smaller streams of the central valleys are not uncommon in June.

On the 5th heavy rains had raised the Pease River, Tex., three feet above the previous high-water mark, submerging railroad tracks and damaging crops. On the 5th the smaller rivers and streams in south-central Missouri were higher than for several years. In southeast Kansas, and Indian and Oklahoma Territories, streams overflowed their banks, causing damage to railroad and farm property. High water in the Colorado and Red rivers submerged fields in Texas on the 7th and 8th. A report from Denison, Tex., dated the 8th, stated that the Red River was higher than at any time since 1867, and that communication with Indian Territory was cut off by the flooding of railroad tracks, and reports from other points along the Red River show that several persons were drowned and that great damage was caused to corn, cotton, and small grain.

On the 18th much damage was caused to farm and other property in central Illinois by the overflow of streams. At Concordia, Kans., the Republican River rose rapidly and a large tract of cultivated bottom land was flooded. On the 19th the Saint Vrian's River, Colo., overflowed its banks, doing much damage to growing crops. The Shenandoah River overflowed its banks in Shenandoah Co., Va., inundating farming lands. A rapid rise was reported in the Missouri River at Kansas City, Mo., on the 21st. On the 22d the Missouri River was 0.8 foot below the danger-line at Kansas City, and considerable damage by overflow was reported along the Missouri and Kansas rivers.

From the 23d to 28th destructive floods along the Little Sioux River, resulting from excessively heavy rainfall, occurred in northwest Iowa, the loss being greatest in Cherokee county, where more than fifty houses were swept away and as many more flooded, and a number of railroad bridges were carried away. Great damage was also caused in counties south of Cherokee, but no estimate of the damage can be made. In South Dakota the Vermillion River was out of its banks, flooding large tracts of cultivated land, and high water in streams

in Nebraska caused a suspension of railroad traffic and did great damage to crops. On the 23d the river was falling at Kansas City, Mo., and on the 28th the river was reported rising and near the danger-line at that place. On the 29th the Missouri River was 21.9 feet, 0.9 foot above the danger-line, at Kansas City, and rising, and sections of railroad and bottom lands were under water. Damage was reported above Kansas City at points on the Missouri River in Nebraska, Kansas, and Missouri.

On the 30th the stage of the water at Kansas City was 22.8 feet, a rise of 0.9 foot in 24 hours. The village of Harlem, on the Missouri River opposite Kansas City, was partially submerged, and the residents were moving to higher ground; considerable damage was caused along the water front in Kansas City, and tracts of farming land were under water. On the Kansas side of the river, opposite Saint Joseph, Mo., and at points in Nebraska, the Missouri River was over its banks. During the last few days of the month a part of the Colorado Desert basin in San Diego county, Cal., near the line of the Southern Pacific Railroad, was being rapidly filled with water. At this point there is a great inland basin which is more than 200 feet below the level of the sea at its lowest point. At the close of the month a lake about five miles in width had formed.

MISCELLANEOUS PHENOMENA.

DROUTH.

In parts of southern Louisiana crops, especially corn, were damaged by dry weather. In southwest Mississippi the rainfall was insufficient and badly distributed, and crops of all kinds were suffering. In west-central Alabama drouth injured early corn, cotton, and garden vegetables. In northeast Pennsylvania the month was very dry and many small streams dried up. In Clark county, Ky., crops were reported in a bad condition the early part of the month owing to drouth. A report from Shreveport, La., dated the 6th, stated that crops were greatly in need of rain, and that many cisterns were dry. During the early part of the month the Mohawk Valley, N. Y., suffered severely from drouth; the Mohawk River was at the lowest stage in several years, and many wells and cisterns were dry. Drouth also prevailed the first half of the month in Jefferson, Lewis, Otsego, and Saint Lawrence counties, N. Y., and in Connecticut. In parts of Connecticut, and in Middlesex and Somerset counties, N. J., there was a scarcity of water and great need of rain at the close of the month. In the central and northern counties of Michigan the rainfall was insufficient and pastures, corn, wheat, and hay promised a small yield.

SUN SPOTS.

Mr. D. E. Hadden, Alta, Iowa: 1st, 5 groups, 14 spots; new group with faculæ by rotation on e. limb. 2d, 4 groups, 8 spots. 3d, 4 groups, 14 spots; new group in faculæ e.; faculæ disappearing by rotation. 8th, 1 group, 11 spots; large area of faculæ by rotation in on ne. limb. 9th, 2 groups, 12 spots; new group e., east of faculæ. 10th, 3 groups, 18 spots; new group and faculæ by rotation in on e. limb. 11th, 3 groups, 13 spots; group and faculæ disappearing by rotation. 12th, 2 groups, 13 spots; large group of faculæ by rotation on ne. limb; small group of faculæ in on e. limb; 2 groups of faculæ on w. limb disappearing by solar rotation. 13th, 4 groups, 17 spots; new group with large spot on edge e. limb by rotation in faculæ; other new group e. 14th, 4 groups, 20 spots; groups n. latitude. 15th, 5 groups; faculæ 1 day in on e. limb. 22d, 6 groups; faculæ by rotation e. limb. 25th, 6 groups, 30 spots; 1 group disappearing by solar rotation. 27th, 7 groups, 34 spots; faculæ by rotation in on e. limb. 28th, 5 groups, 22 spots; large spot had umbra and penumbra. 29th, 5 groups, 15 spots; 1 large spot. 30th, 5 groups, 12 spots; haze, could not count spots accurately; group by rotation on e. limb.

Mr. John W. James, Riley, Ill.: the group of the 28th of May vanished 9th, short of w. edge, faculæ taking its place 7th, new group on e. edge, its largest spot estimated 22,000 miles in diameter. 12th, another new group 2 days on e. edge. 14th, large spot and group on e. edge. 16th, new group 3 days on edge; prominent faculæ e. of large spot of 14th. 21st, 1 new spot, and 2 new groups near e. edge; new group 3 days from w. edge. 22d, 1 new spot near e. edge; immense areas of faculæ near e. and w. limbs; could trace them two-thirds sun's apparent diameter. 24th, 2 new groups of small spots 3 days in on e. edge in s. latitude; these increased rapidly in size, 1 spot reaching an estimated diameter of 22,000 miles in 2 or 3 days. 26th, 1 new spot on e. limb. 28th, 2 new groups n. of spot of 24th, and 1 faint spot with faculæ near e. edge.

Mr. H. D. Gowey, North Lewisburgh, Ohio: sun spots were observed on the 2d, 3d, and 9th to 30th.

Haverford College Observatory, Pa. (observed by Prof. F. P. Leavenworth):

Date.	Number of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Faculæ.	Remarks.
	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	Spots.	Groups.	
June, 1891.										
1, 10 a. m...	2	2	0	0	....	....	5	32	2	Definition fair; 3 large spots.
2, 11 a. m...	1	1	0	0	....	....	6	38	4	Definition good; 2 large spots.
3, 9 a. m...	0	0	1	3	....	....	4	33	3	Definition fair.
4, 11 a. m...	0	0	1	5	....	....	3	20	1	Definition fair.
8, 11 a. m...	0	0	1	3	....	....	1	11	1	Definition poor.
9, 11 a. m...	1	7	0	0	....	....	2	17	0	Definition poor.
10, 10 a. m...	1	1	0	0	....	....	3	29	2	Definition poor; 1 large spot.
11, 9 a. m...	0	0	0	0	....	....	3	19	2	Definition poor; 1 large spot.
12, 3 p. m...	2	11	0	0	....	....	5	66	3	Definition fine; 1 large spot.
13, 11 a. m...	1	1	1	3	....	....	4	24	3	Definition good; 2 large spots.
14, 10 a. m...	1	1	0	0	....	....	5	39	2	Definition good; 2 large spots.
15, 10 a. m...	1	16	0	0	....	....	6	47	3	Definition good; 2 large spots.
16, 9 a. m...	2	42	0	0	....	....	6	88	2	Definition good; 2 large spots.
17, 9 a. m...	4	12	1	10	....	....	5	100	2	Definition fair; 1 large spot.
22, 9 a. m...	4	12	0	0	....	....	9	69	5	Definition good; 2 large spots.
23, 9 a. m...	1	2	2	14	....	....	7	48	3	Definition good; 3 large spots.
24, 9 a. m...	2	4	0	3	....	....	9	43	3	Definition good; 3 large spots.
25, 9 a. m...	3	18	1	3	....	....	8	54	3	Definition fair; 2 large spots.*
26, 9 a. m...	1	49	1	4	....	....	7	108	3	Definition good; 4 large spots.
27, 8 a. m...	0	0	1	1	....	....	6	56	2	Definition poor; 4 large spots.
28, 9 a. m...	2	10	....	....	....	....	7	70	2	Definition fair; 3 large spots.
29, 9 a. m...	0	0	....	....	....	....	6	61	1	Definition good; 1 large spot.
30, 9 a. m...	1	1	....	....	....	....	7	35	2	Definition good.

*Immense faculæ.

ATMOSPHERIC ELECTRICITY.

AURORAS.

Auroras were reported as follows: 4th, Eastport, Orono, and Kent's Hill, Me.; Sault de Ste. Marie, Mich. 5th, Kent's Hill, Me.; Sault de Ste. Marie, Mich. 8th, Sault de Ste. Marie, Mich. 15th, Westfield, Wis. 25th, Sandwich, Ill. 26th, Farmington, Me. 29th, Amana, Iowa; Farmington, Me. On the 4th, about 1 a. m., an aurora of a grayish blue tint, extending from north to northeast and to altitude about 30°, was observed at Sault de Ste. Marie, Mich. It had the appearance of a brilliant curtain, with numerous bright beams